



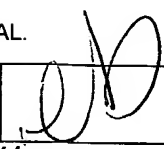
UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,515	03/29/2002	Hiroki Kabumoto	020313	4583
23850	7590	10/01/2004		
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006				
			EXAMINER TSANG FOSTER, SUSY N	
			ART UNIT 1745	PAPER NUMBER

DATE MAILED: 10/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/088,515	KABUMOTO ET AL.	
	Examiner	Art Unit	
	Susy N Tsang-Foster	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 13-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 11 is/are rejected.
- 7) ☒ Claim(s) 5-10 and 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>20020329</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-12 in the reply filed on 15 July 2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 13-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 15 July 2004.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. The information disclosure statement filed March 29, 2002 has been considered by the Examiner.

It is noted that JP 3-182052 was cited as an X reference in the Search Report dated 11/20/2001. However, the reference discloses that the hydrophilic parts 5 face the rib parts of the gas separator (see Figure 4) and the hydrophobic parts 4 face the gas channels and the reference therefore does not appear to be applicable to the instant claims which recite that the

water retentivity is higher in parts facing the oxidant channels than in parts facing the ribs (Note-oral translation was obtained for page 3, upper right column, line 1 to page 4, upper right column, line 5 and Figures 1 to 7 of the reference at the USPTO Translation Branch on 29 September 2004).

Drawings

5. Figures 11A and 11B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

6. Claims 4, and 7-11 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Dependent claim 4 only further limits a size of the predetermined region of the gas diffusion layer when the predetermined region of the gas diffusion layer is chosen from at least one of the gas diffusion layer and the cathode catalyst layer, but claim 4 as written does not actually require that the gas diffusion layer be chosen from the at least one of the gas diffusion layer and the cathode catalyst layer recited in claim 1.

Claims 7-11 do not further limit claim 1 because claim 7 and its depend claims recite the limitation “wherein the gas diffusion layer has a water retentivity adjustment layer that is formed by applying a mixture containing carbon particles, and the water retentivity adjustment layer is constructed in such a manner that water retentivity is higher in parts facing the oxidant channels than in parts facing the ribs” which is a different embodiment from claim 1 which recites “at least one of the gas diffusion layer and the cathode catalyst layer is constructed in such a manner that water retentivity is higher in parts facing the oxidant channels than in parts facing the ribs.”

Paragraph 22 of the specification (see USPGPUB 2002/0192530 which corresponds to the instant application) states “[a]lternatively, the above water retentivity adjustment can be accomplished by applying a mixture of carbon particles and a water repellant material on the gas diffusion layer so as to form a water retentivity adjustment layer, and by adjusting water retentivity of the water retentivity adjustment layer.”

Art Unit: 1745

Paragraph 116 of the specification discusses the second embodiment of applicant's instant invention in which a mixture of carbon particles and a water repellent material is applied on the surface of the cathode side gas diffusion layer to form a water retentivity adjustment layer.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 3 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 3, it is unclear what the predetermined region is.

In claim 11, the limitation "carbon particles that are used in the parts facing the ribs have a larger specific surface area than carbon particles that are used in the parts at an oxidant outlet side" is indefinite because it unclear how carbon particles used in the parts facing the ribs would have a different specific surface area at parts at an oxidant outlet side when the ribs conventionally extend from an oxidant inlet to an oxidant outlet side.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1745

10. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Taniguchi et al. (US Patent No. 6,083,638).

Taniguchi et al. disclose a fuel cell comprising a unit cell that is formed by arranging a cathode catalyst layer on one surface of a proton exchange membrane and an anode catalyst layer on another surface of the proton exchange membrane; a first plate on which fuel channels for supplying a fuel are formed; and a second plate on which (a) oxidant channels for supplying an oxidant and (b) ribs are formed, the second plate and the first plate sandwiching the cell unit in such a manner that the oxidant channels and the ribs face the cathode catalyst layer and the fuel channels face the anode catalyst layer, wherein a gas diffusion layer (current collector 41) is interposed between the cathode catalyst layer and the second plate, and the gas diffusion layer is formed in such a manner that water retentivity is higher in parts facing the oxidant channels than in parts facing the ribs (see Figures 1, 6(a), and 6(b); col. 3, lines 20-65; col. 4, line 65 to col. 7, line 34; col. 12, line 42 to col. 13, line 32).

Allowable Subject Matter

11. Claims 5, 6, and 12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

The closest prior art of record, Taniguchi et al. (US Patent No. 6,083,638) do not disclose, teach, or suggest either of the following two distinguishing features: (1) the cathode catalyst layer is made of a mixture of (a) carbon particles that support a catalyst and (b) an ion

Art Unit: 1745

exchanger, and an amount of ion exchanger in the cathode catalyst layer is larger in the parts facing the oxidant channels than in the parts facing the ribs or 2) the gas diffusion layer is made of a conductive base material that contains a water repellent material and an amount of the water repellent material in the gas diffusion layer is smaller in the parts facing the oxidant channel than in the parts facing the ribs.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Dufner et al. (US Patent No. 6,024,848) discloses a fuel cell comprising a gas diffusion layer having a hydrophobic phase and a hydrophilic phase where the hydrophilic phase faces the rib regions of the separator (see Figure 2 and col. 5, lines 45-55).

Any inquiry concerning this communication or earlier communications should be directed to examiner Susy Tsang-Foster, Ph.D. whose telephone number is (571) 272-1293. The examiner can normally be reached on Monday through Friday from 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached at (571) 272-1292.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Art Unit: 1745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

st/



Susy Tsang-Foster
Primary Examiner
Art Unit 1745